each G is a bond independently selected from single, double or triple bonds, wherein when G is a single bond, two R groups are attached to each C, and when G is a double bond, one R group is attached to each C, wherein each R is a substitution group independently selected from the group consisting of hydrogen, alkyl, alcohol, aromatic, amino, amido, nitro, ether, ester, aldehyde, sulfonyl, silicon moiety, halogen, sulfur containing moiety, phosphorus containing moiety, and ethylene glycol.

REMARKS

Claims 47, 48, 50, 51, 55, 56, and 58-61 are pending. Claims 49, 52,54, 57, and 62-67 have been allowed. An appendix of pending and allowed claims is attached for the Examiner's convenience.

As a preliminary matter, the applicants acknowledge that the inventorship has been corrected in compliance with 37 C.F.R. § 1.48 by adding Thomas J. Meade as an inventor.

Applicant's acknowledge the Examiner's approval of the correction to Figure 1 and the reminder that formal drawings have yet to be filed. Applicant's are in the process of the preparing formal drawings, and, upon issuance of a 'Notice of Allowance' will submit formal drawings.

Compliance with 37 C.F.R. §§ 1.821-1.825:

Entry of this amendment is respectfully requested. The amendments are made in adherence with 37 C.F.R. § 1.821-1.825. This amendment is accompanied by a floppy disc containing the above named sequence, SEQUENCE ID NUMBERS 1-2 in computer readable form, and a paper copy of the sequence information. The computer readable sequence listing was prepared through use of the software program "PatentIn" provided by the PTO. The information contained in the computer readable disc is identical to that of the paper copy. This amendment contains no new matter. Applicant submits that this amendment, the

accompanying computer readable sequence listing, and the paper copy thereof serve to place this application in a condition of adherence to the rules 37 C.F.R. § 1.821-1.825.

Rejections Under 35 U.S.C. § 112, first paragraph:

Claims 50 and 55 are rejected as claiming new matter.

The Examiner states that written support is not found for the B-D moieties "-CS-O- or -O-CS-."

The applicants respectfully submit that support for these moieties is found on page 21, lines 8-15 of the specification:

> Preferred B-D bonds are selected from acetylene (-C≡C-, also called alkyne or ethyne), alkene (-CH=CH-, also called ethylene), substituted alkene (-CR=CR-, -CH=CR- and -CR=CH-), amide (-NH-CO- and -NR-CO- or -CO-NH- and -CO-NR-), azo (-N=N-), esters and thioesters (-CO-O-, -O-CO-, **-CS-O- and -O-CS-**) and other conjugated bonds such as (-CH=N-, -CR=N-, -N=CH- and -N=CR-), (-SiH=SiH-, -SiR=SiH-, -SiR=SiH-, and -SiR=SiR-), (-SiH=CH-, -SiR=CH-, -SiH=CR-, -SiR=CR-, -CH=SiH-, -CR=SiH-, -CH=SiR-, and -CR=SiR-). (emphasis added).

Thus, the specification as filed contains support for B-D moieties selected from the thioesters -CS-O- or -O-CO-. Accordingly, applicants request withdrawal of the rejection.

Rejections Under 35 U.S.C. § 112, second paragraph:

Claims 47, 48, 50, 51, 55, 56, and 59-61 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

The Examiner requests clarification regarding the composition of the conductive oligomer in claims 47 and 48. Applicants have amended claims 47 and 48 to clarify that the oligomer comprises an ethyl-pyridine protected sulfur atom.

Claims 50 and 55 are rejected for using the word "preferably". The claims have been amended to remove the language "preferably".

The Examiner requests clarification for "R" in claims 50, 51, 55, and 56. Claims 50, 51, 55 and 56 have been amended to provide a Markush group for each independent R and added language to clarify that each R is independently selected from the group of compounds provided.

The Examiner requests clarification for what is meant when n is greater than 1 in claims 50, 51, 55 and 56.

Applicants have amended claims 51 and 56 to clarify that when n is greater than 1, each "B-D" moiety is independently selected for the group provided.

Applicants have amended claims 50 and 55 to clarify that when multiple B-D moieties are present, each moiety is independently selected from group provided.

Applicants thank the Examiner for his suggestions. In view of these remarks and amendments, applicants respectfully request the rejections be withdrawn.

Double Patenting Rejection:

Claim 58 is provisionally rejected under the judicially created doctrine of obviousness type double patenting, as being unpatentable over claims 9, 10, 16, 17 and 54 of co-pending application Serial No. 08/743,798. Applicants respectfully traverse.

The M.P.E.P. § 804.01 states that the third sentence of 35 U.S.C. § 121:

> prohibits the use of a patent issuing on an application with respect to which a requirement for restriction has been made, or on an application filed as a result of such a requirement, as a reference against any divisional application, if the divisional application is filed before the issuance of the patent. The 35 U.S.C. 121 prohibition applies only where the Office has made a requirement for restriction.

Applicants point out that a restriction requirement was issued by the Examiner for the parent case, Serial No. 08/08/743,798 in July 1997. In response to the restriction requirement, applicants elected Group I to pursue in the parent and filed the pending application as a divisional, pursuing Group IV.

Applicants respectfully submit that a terminal disclaimer is not required and request withdrawal of the rejection.

Conclusion:

The applicants submit that the claims are now in condition for allowance and an early notification of such is respectfully solicited. If after review of the amendment, the Examiner feels that there are further remaining issues, the applicants respectfully request the Examiner call the undersigned, Robin M. Silva, at (415) 781-1989.

The Commissioner is authorized to charge any additional fees, including any extension fees, which may be required, or credit any overpayment to Deposit Account No. 06-1300 (Our Order No. A-63761-1/RFT/RMS/RMK).

Dated: 6/16/00

Respectfully submitted,

FLEHR HOHBACH TEST
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SF-1021750v1

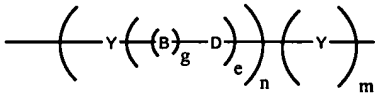
Appendix of Pending and Allowed Claims

47. (Amended) A conductive oligomer [with]comprising an ethyl-pyridine protected sulfur atom.

48. (Amended) A conductive oligomer [with]comprising a trimethylsilylethyl protected sulfur atom.

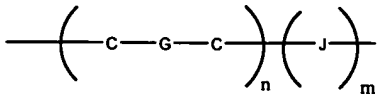
49. A composition comprising a conductive oligomer covalently attached to a nucleoside. (Allowed)

50. (Amended) A composition according to claim 49 wherein said conductive oligomer has the formula:



wherein
Y is an aromatic group;
n is an integer from 1 to 50;
g is either 1 or zero;
e is an integer from zero to 10;and
m is zero or 1;
wherein when g is 1, each B-D is a conjugated bond independently selected from -C≡C-, -CH=CH-, -CR=CR-, -CH=CR-, -CR=CH-, -NH-CO-, -NR-CO-, -CO-NH-, -CO-NR-, -N=N-, -CO-O-, -O-CO-, -CS-O-, -O-CS-, -CH=N-, -CR=N-, -N=CH- and -N=CR-, -SiH=SiH-, -SiR=SiH-, -SiR=SiH-, -SiR=SiR-, -SiH=CH-, -SiR=CH-, -SiH=CR-, -SiR=CR-, -CH=SiH-, -CR=SiH-, -CH=SiR-, -CR=SiR-, wherein each R is a substitution group independently selected from the group consisting of alkyl, alcohol, aromatic, amino, amido, nitro, ether, ester, aldehyde, sulfonyl, silicon moiety, halogen, sulfur containing moiety, phosphorus containing moiety, and ethylene glycol; and
wherein when g is zero, e is 1 and D is [preferably] carbonyl, or a heteroatom moiety, wherein the heteroatom is selected from oxygen, sulfur, nitrogen or phosphorus.

51. (Amended) A composition according to claim 49 wherein said conductive oligomer has the formula:



wherein
n is an integer from 1 to 50;
m is 0 or 1;
C is carbon;

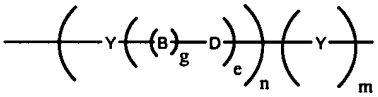
J is carbonyl or a heteroatom moiety, wherein the heteroatom is selected from the group consisting of nitrogen, silicon, phosphorus, sulfur; and
each G is a bond independently selected from single, double or triple bonds, wherein when G is a single bond, two R groups are attached to each C, and when G is a double bond, one R group is attached to each C, wherein each R is a substitution group independently selected from the group consisting of hydrogen, alkyl, alcohol, aromatic, amino, amido, nitro, ether, ester, aldehyde, sulfonyl, silicon moiety, halogen, sulfur containing moiety, phosphorus containing moiety, and ethylene glycol.

52. A composition according to claim 49 wherein said nucleoside is part of a nucleic acid. (Allowed)

53. A composition according to claim 49 further comprising a covalently attached electron transfer moiety (ETM). (Allowed)

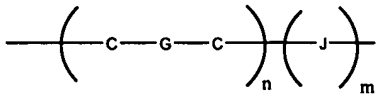
54. A composition comprising a conductive oligomer covalently attached to a phosphoramidite nucleoside. (Allowed)

55. (Amended) A composition according to claim 52 wherein said conductive oligomer has the formula:



wherein
Y is an aromatic group;
n is an integer from 1 to 50;
g is either 1 or zero;
e is an integer from zero to 10;and
m is zero or 1;
wherein when g is 1, each B-D is a conjugated bond[;]independently selected from -C≡C-, -CH=CH-, -CR=CR-, -CH=CR-, -CR=CH-, -NH-CO-, -NR-CO-, -CO-NH-, -CO-NR-, -N=N-, -CO-O-, -O-CO-, -CS-O-, -O-CS-, -CH=N-, -CR=N-, -N=CH- and -N=CR-, -SiH=SiH-,-SiR=SiH-, -SiR=SiH-, -SiR=SiR-, -SiH=CH-, -SiR=CH-, -SiH=CR-, -SiR=CR-, -CH=SiH-, -CR=SiH-, -CH=SiR-, -CR=SiR-, wherein each R is a substitution group independently selected from the group consisting of alkyl, alcohol, aromatic, amino, amido, nitro, ether, ester, aldehyde, sulfonyl, silicon moiety, halogen, sulfur containing moiety, phosphorus containing moiety, and ethylene glycol; and
wherein when g is zero, e is 1 and D is [preferably] carbonyl, or a heteroatom moiety, wherein the heteroatom is selected from oxygen, sulfur, nitrogen or phosphorus.

56. (Amended) A composition according to claim 52 wherein said conductive oligomer has the formula:



wherein
n is an integer from 1 to 50;
m is 0 or 1;
C is carbon;
J is carbonyl or a heteroatom moiety, wherein the heteroatom is selected from the group consisting of nitrogen, silicon, phosphorus, sulfur; and
each G is a bond independently selected from single, double or triple bonds, wherein when G is a single bond, two R groups are attached to each C, and when G is a double bond, one R group is attached to each C, wherein each R is a substitution group independently selected from the group consisting of hydrogen, alkyl, alcohol, aromatic, amino, amido, nitro, ether, ester, aldehyde, sulfonyl, silicon moiety, halogen, sulfur containing moiety, phosphorus containing moiety, and ethylene glycol.

57. A composition comprising a conductive oligomer covalently attached to a CPG-nucleoside. (Allowed)

58. An electrode comprising:
a) a monolayer comprising a passivation agent layer comprising conductive oligomers; and
b) at least one nucleic acid covalently attached to said electrode with a spacer.
(Pending)

59. A composition according to claim 56 wherein said spacer is a conductive oligomer. (Pending)

60. A composition according to claim 56 wherein said spacer is an insulator. (Pending)

61. A composition according to claim 56 wherein said passivation agent layer further comprises insulators. (Pending)

62. A composition comprising a phosphoramidite nucleoside covalently linked to a metallocene. (Allowed)

63. A composition according to claim 62 wherein said nucleoside comprises a ribose and said metallocene is covalently attached to the 2' position of said ribose. (Allowed)

64. A composition according to claim 62 wherein said metallocene is covalently attached to the base of said nucleoside. (Allowed)

65. A composition according to claim 62 wherein said metallocene is ferrocene. (Allowed)

66. A composition comprising a deoxynucleotide triphosphate comprising a covalently attached metallocene. (Allowed)

67. A composition according to claim 66 wherein said metallocene is ferrocene. (Allowed)